

# NATIONAL TRANSPORTATION SAFETY BOARD

Office of Research and Engineering  
Materials Laboratory Division  
Washington, D.C. 20594



October 12, 2005

## MATERIALS LABORATORY FACTUAL REPORT

Report No. 05-109

### A. ACCIDENT

Place : Wilmer, Texas  
Date : September 23, 2005  
Vehicle : MCI Motorcoach  
NTSB No. : HWY05MH035  
Investigator : Joseph Kolly

### B. COMPONENTS EXAMINED

Floor panel.

### C. DETAILS OF THE EXAMINATION

An overall view of the part submitted for examination is shown in figure 1. The steel panel measured approximately 23.5 inches (front to back) by 26.5 inches (side to side) by 0.05 inch thick. A 1-inch lip had been folded up at 90° around all four sides, and the folded panel had been welded to the bus frame at four locations along each edge. The length of each weld was approximately 1.5 to 2 inches. The panel had originally been installed in a horizontal orientation within the frame of the bus above the tandem right rear drive wheels.

The panel was generally oxidized, discolored and covered in soot. The top surface of the panel had some areas of rust and retained remnants of some material that appeared to be insulation.

The panel had two areas of upward deformation running from front to back, separated by a downward crease approximately 3 inches wide and 2 inches deep. The inboard area of upward deformation was roughly cylindrical in shape, being broadly curved front to back and sharply bounded inboard and outboard. The inboard area of upward deformation was approximately 12 inches wide, and its inboard boundary was approximately 4 inches from the inboard edge of the panel; the deformation was approximately 2 inches high at its maximum. The outboard area of upward deformation extended from the front to back crease to the outboard edge of the panel. This upward deformation was approximately 1 inch high at maximum, and was also roughly cylindrical, but less well defined. A shallow downward crease approximately 2 inches wide 1 inch deep ran left to right through this outboard upward deformation; the front edge of this crease was approximately 7 inches back from the front edge of the panel. The folded lips

along all four edges of the panel had been substantially straightened, as can be seen in figure 2.

All of the fracture features at the locations of the sixteen welds were consistent with tensile overstress separations. Seven of the fractures appeared to be limited to lie along the edges of the welds, possibly within the heat affected zones. Five additional fractures separated along the weld boundaries, but had partial tears extending into the panel. Four of the fractures propagated through the panel itself, leaving roughly triangular pieces of the panel still welded to the frame of the bus. These triangular pieces remained on the motorcoach and were photographed, and shown to be oriented outward from the surface of the frame at an angle of approximately 30°.

Carl R. Schultheisz  
Materials Research Engineer

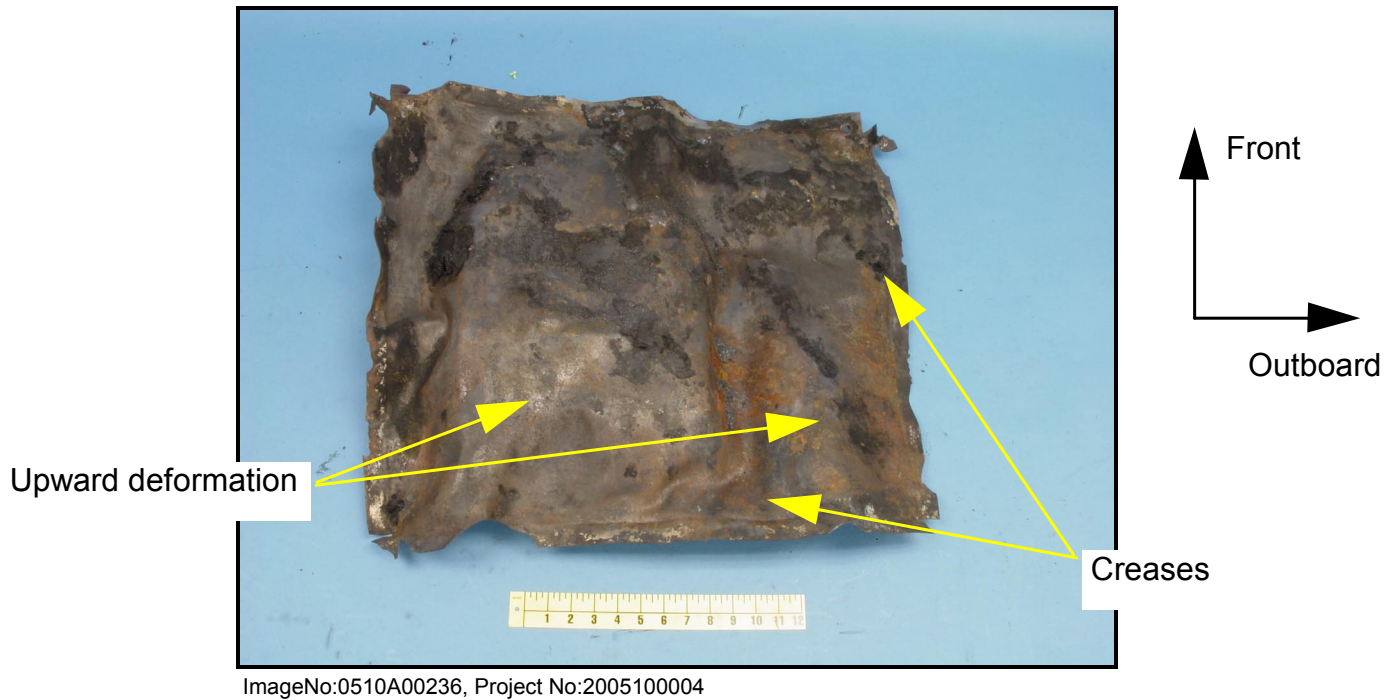


Figure 1. Top surface of the floor panel submitted for examination.

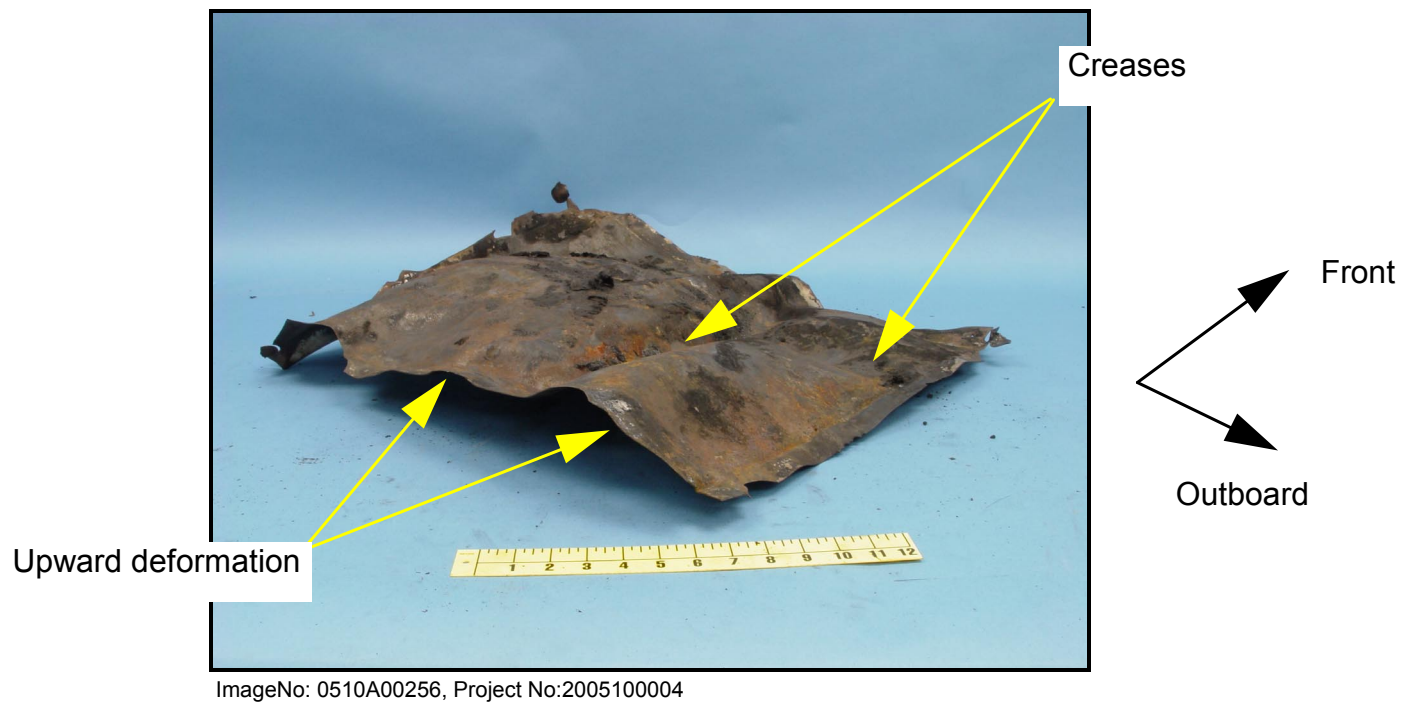


Figure 2. Oblique view of the top surface of the panel. The folded lips along all four edges have been largely straightened.